

Listing of Claims

This listing of claims will replace all prior versions of claims and listings of claims in the application:

Please amend Claims 1-3, 5-6, 8-9, 11, 13-22, 32-34, and 36-37, as shown below. Please add Claim 38.

1. (currently amended) A computerized method for creating a three dimensional model from ~~one or more~~ image panoramas, the method comprising: receiving ~~one or more~~ a plurality of image panoramas representing a visual scene and having ~~one or more~~ an objects, the object occupying a field of view of more than 180 degrees in the panoramas; determining a directional vector for each image panorama, the directional vector indicating an orientation of the visual scene with respect to a reference coordinate system; transforming the image panoramas such that the directional vectors are substantially aligned relative to the reference coordinate system; aligning the transformed image panoramas to each other; and creating a three dimensional model of the visual scene from the transformed and aligned image panoramas using the reference coordinate system, wherein creating a three dimensional model includes ~~identifying a selected object in the transformed and aligned image panoramas and associating geometry information with the selected object, the geometry information comprising 3-D coordinates describing the position and orientation of the selected object in the reference coordinate system.~~

2. (currently amended) The method of claim 1 wherein the directional vector is

determined based, at least in part, on instructions identifying elements of the image panoramas received from a user.

3. (currently amended) The method of claim 2 wherein the instructions from the user identify two or more substantially parallel features in the image panoramas.

4. cancelled.

5. (currently amended) The method of claim 2 wherein the instructions from the user identify a horizon line of ~~the~~ at least one image panorama.

6. (currently amended) The method of claim 2 wherein the instructions comprise the identification of two or more areas of the image panoramas, each area containing one or more elements and further comprising automatically identifying the two elements contained in the two or more areas.

7. (original) The method of claim 6 further comprising using edge detection to automatically identify the two elements.

8. (currently amended) The method of claim 1 wherein the image panoramas are aligned relative to the reference coordinate system such that the directional vector of each panorama is at least substantially parallel to one axis of the

reference coordinate system.

9. (currently amended) The method of claim 1 wherein the image panoramas are aligned relative to the reference coordinate system such that the directional vector of each panorama is at least substantially orthogonal to one axis of the reference coordinate system.

10. (original) The method of claim 1 wherein the image panoramas are aligned according to instructions received from a user.

11. (currently amended) A computerized method of interactively editing objects in a panoramic image, the method comprising: receiving an image panorama representing a visual scene, the image panorama having ~~one or more~~an objects and a point source, the object occupying a field of view of more than 180 degrees in the panorama; creating a three dimensional model of the visual scene using features of the visual scene and the point source, including ~~identifying a selected object in the image panorama and~~ associating geometry information with the ~~selected~~ object, the geometry information comprising 3-D coordinates describing the position and orientation of the ~~selected~~ object in a reference coordinate system; receiving an edit to the ~~selected~~ object in the panorama; transforming the edit relative to a viewpoint defined by the point source; and projecting the transformed edit onto the ~~selected~~ object.

12. (previously presented) The method of claim 11 wherein the three-dimensional model comprises at least one of depth information and geometry information.

13. (currently amended) The method of claim 11, further comprising receiving an edit to color information associated with the objects ~~of the image~~.

14. (currently amended) The method of claim 11, further comprising receiving an edit to alpha information associated with the objects ~~of the image~~.

15. (currently amended) The method of claim 11, further comprising receiving an edit to depth information associated with the objects ~~of the image~~.

16. (currently amended) The method of claim 11, further comprising receiving an edit to geometry information associated with the objects ~~of the image~~.

17. (currently amended) The method of claim 11 further comprising: providing a user with an interactive drawing tool that specifies edits for ~~one or more~~ the objects ~~of the image~~; and receiving the edits made by the user using the interactive drawing tool.

18. (currently amended) The method of claim 17 wherein the interactive

drawing tool is one of an extrusion tool, a ground plane tool, a depth chisel tool and a non-uniform rational B-spline tool.

19. (currently amended) The method of claim 17, wherein the interactive drawing tool specifies a selected value for depth for the objects of the image.

20. (currently amended) The method of claim 17, wherein the interactive drawing tool incrementally adds to the depth for the objects of the image.

21. (currently amended) The method of claim 17, wherein the interactive drawing tool incrementally subtracts from the depth for the objects of the image.

22. (currently amended) A method for projecting texture information onto a geometric feature within an image panorama, the method comprising: receiving instructions from a user identifying a three-dimensional geometric surface within an image panorama, the image panorama containing a features having one or more textures, the feature occupying a field of view of more than 180 degrees in the panorama; determining a directional vector from the three-dimensional geometric surface; creating a geometric model of the image panorama based at least in part on the three-dimensional geometric surface and the directional vector, wherein creating a geometric model includes associating geometry information with a selected the feature, the geometry

information comprising 3-D coordinates describing the position and orientation of the ~~selected~~-feature in a reference coordinate system; and applying the one or more textures to the ~~selected~~-feature in the image panorama based on the geometric model.

23. (original) The method of claim 22 wherein the instructions are received using an interactive drawing tool.

24. (original) The method of claim 22 wherein the three-dimensional geometric surface is one of a floor, a wall, or a ceiling.

25. (original) The method of claim 22 wherein the directional vector is orthogonal to the planar surface.

26. (original) The method of claim 22 wherein the geometric model comprises depth information.

27. (original) The method of claim 22 wherein the texture information comprises color information.

28. (original) The method of claim 22 wherein the texture information comprises luminance information.

29-31 cancelled.

32. (currently amended) A system for creating a three dimensional model from ~~one or more~~ a plurality of image panoramas, the system comprising: means for receiving ~~one or more~~ the image panoramas representing a visual scene having ~~one or more~~ an objects; the object occupying a field of view of more than 180 degrees in the panoramas, means for allowing a user to interact with the system to determine a directional vector for each image panorama; means for aligning the image panoramas relative to each other; and means for creating a three dimensional model from the aligned panoramas, wherein creating a three dimensional model includes ~~identifying a selected object in the aligned image panoramas and~~ associating geometry information with the ~~selected~~ object, the geometry information comprising 3-D coordinates describing the position and orientation of the ~~selected~~ object in a reference coordinate system.

33. (currently amended) The system of claim 32, wherein the input image panoramas ~~e~~ comprise two-dimensional images.

34. (currently amended) The system of claim 32, wherein the input image panoramass comprise three-dimensional images including geometry information.

35. (original) The system of claim 32 wherein the image panoramas are aligned according to instructions received from a user.

36. (currently amended) A system for interactively editing objects in a panoramic image, the system comprising: a receiver for receiving one or more image panoramas representing a visual scene having one or more objects and a point source; a modeling module for creating a three dimensional model of the visual scene including identifying a selected object in the one or more image panoramas, the selected object occupying a field of view of more than 180 degrees in the panoramas, and associating geometry information with the selected object, the geometry information comprising 3-D coordinates describing the position and orientation of the selected object in a reference coordinate system—; one or more interactive editing tools for providing an edit to the selected object; a transformation module for transforming the edit relative to a viewpoint defined by the point source; and a rendering module for projecting the transformed edit onto the selected object.

37. (currently amended) The system of claim 36 wherein the one or more editing tools comprises at least one of a ground plane tool, an extrusion tool, a depth chisel tool, and a non-uniform rational B-spline tool.

38. (new) A computerized method for creating a three dimensional model from an image panorama, the method comprising: receiving an image panorama representing a visual scene and having an object, the object occupying a field of view of more than 180 degrees in the panorama; and creating a three dimensional model of the visual scene from the image panorama using the

reference coordinate system, wherein creating a three dimensional model includes associating geometry information with the object, the geometry information comprising 3-D coordinates describing the position and orientation of the object in the reference coordinate system.